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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,036	10/03/2005	Toyohisa Fujimoto	Q90347	6985

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EXAMINER	
ZIMMER, MARC S	
ART UNIT	**PAPER NUMBER**
1796	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,036	FUJIMOTO, TOYOHISA	
	Examiner	Art Unit	
	MARC S. ZIMMER	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) *6,10 and 14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-9,11-13 and 15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Election/Restrictions

Applicant's election of that embodiment wherein component (A) contributes alkenyl groups and (B) hydrosilyl groups is acknowledged. However, insofar as at least one of the references cited herein does, in fact, teach more one or more of the unelected embodiments, in addition to the elected embodiment, the Examiner will provide an assessment of their patentability as well. Claims 6, 10, and 14 will remain withdrawn for the time being.

Claim Analysis

Claim 1 recites a composition comprising three essential components of which one is a polymer described in terms of the process by which it is made. The process entails simply reacting a polyether adhering to specified property limitations and having at least 0.8 reactive groups per molecule with a molecule having both a silicon group and a group that is chemically complimentary to the reactive group contributed by the polyether. It is stipulated that the silicon-containing compound is added in an amount that provides 0.8 to 1.5 molecules per molecule of the polyether which, again, has at least 0.8 reactive groups per molecule.

The silylation rate of the product depends on the two aforementioned variables. Where there are 2 reactive groups per polyether chain and 0.8 molecules of silane are added per polyether molecule, there will be 40% silylation with a likely distribution of mono and disilylated polyether. (Statistically speaking, since silylation at one end is unlikely to have any effect on the reactivity of the other endgroup, once the first 0.4 equivalents are reacted, the remaining 0.4 equivalents will be statistically reacted

equally with monosilylated and unsilylated polymer hence one might expect there to be a final product distribution of 60% monosilylated polyether, 20% disilylated polyether, and 20% unsilylated polyether.) Therefore, it appears that the limitations of claim 2 would be necessarily satisfied if the limitations of claim 1 are met.

At the other extreme, assuming there is 0.8 reactive groups per molecule and 1.5 molecules of silane per molecule of polyether, 80% of the polymer chains, on average, will be monosilylated and the rest of the chains will be unsilylated due to the absence of a group that is reactive towards the silane.

Another way of expressing the outcome of the reaction disclosed in the claim is that the polymer will have a silylation rate of between 40 and 75% assuming a telechelic polymer precursor with both ends having a reactive group.

Concerning claim 2, the limitation recited in the last two lines means, in the Examiner's estimation that there must be at least one polyoxyalkylene present in the composition that is devoid of silicon groups, but also has the same number-average molecular weight and polydispersity as does the silylalted polymer since, after all, the claim seems to be indicating that the plasticizer is the unreacted portion of polymer precursor (A).

Claim Objections

In claim 2, the word "means" in the last line of the claim should be replaced with "is".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7-9, 11-13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Higuchi et al., JP 5-339490.

Higuchi teaches a composition that, according to the abstract, comprises 100 parts of a silylated polyoxyalkylene, 1-150 parts of a polyether mono-ol, and a curing catalyst. The silylated polymer chain is made according to any of the methods recited in the Japanese patent disclosures mentioned in paragraph 18. Review of some of these disclosures, JP 3-47825 and JP 3-75257 for instance, verify that the silylated polymer chain is to be prepared in the presence of double metal cyanide complexes. (JP 3-47825 mentions numerous U.S. Patent documents in the upper right quadrant of page 5, many of which the Examiner has confirmed are directed to polyether formation in the presence of DMC catalysts. JP 3-75257 indicates in the abstract that metal cyanide complexes are being employed.)

Of course, the reason that this is relevant is because DMC catalysts are known to give small molecular weight distributions thus it is clear that Applicants claimed range with respect to this variable is inherently satisfied. As for the molecular weight range, the reference advocates using polymers with a molecular weight in the range of 3,000-30,000 in paragraph 31.

A silylation rate of 50% or more is contemplated in paragraph 24 and various synthetic strategies for introducing silyl groups including hydrosilylation, reaction of polyether terminal groups with silanes featuring isocyanatoalkyl groups, and reaction of a mercaptan-functional silane with a olefin-modified polyether are outlined in paragraphs 25-30. Of course, as the silylation rate exceeds 70%, the limitations of claim 2 are absolutely satisfied. At lower levels, there is a statistical probability that at least some small fraction of all the chains would remain unsilylated thereby satisfying the limitations of claim 3.

Claims 1-2, 5, and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Mahdi, U.S. Patent Application Publication No. 2004/0188016. Mahdi teaches a sealant composition comprising the materials delineated in the abstract. Relevant to the present discussion, the silylated polyether is one obtained by reacting an isocyanate-functional alkoxysilane with a polyether polyol in approximately a 1:1 ratio of isocyanate to hydroxyl groups- see paragraph [0082]- and, thus the conversion rate is expected to be close to stoichiometric. The polyol precursor, itself, is made using DMC catalysts according to [0034] and the molecular weight can be as low as 2,000 and as high as 20,000 according to paragraph [0027]. For the record, the Examiner appreciates that the expression of molecular weight is that of a weighted average, as opposed to the number average being claimed. Nevertheless, the Examiner submits that because DMC catalysts are being used and, hence, the polydispersity will tend towards 1, the number- and weight average molecular weight of these polymers will be nearly the

same. Paragraphs [0043] and [0051] teach appropriate catalysts and fillers respectively.

Okamoto et al., U.S. Patent # 7,115,695 and Masaoka, U.S. Patent # 6,569,980 are other documents that appear to anticipate at least some of the present claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARC S. ZIMMER whose telephone number is (571)272-1096. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jim Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

February 1, 2008

/Marc S. Zimmer/
Primary Examiner, Art Unit 1796